PAPER ID-410609

Roll No: | | | | | | | | | | | | | |

B. TECH.
(SEM V) THEORY EXAMINATION 2021-22
PROGRAMMING, DATA STRUCTURES AND ALGORITHMS USING PYTHON

Time: 3 Hours ***Total Marks: 100***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

a. Define range() function.
b. Explain the characteristics of python language
c. Outline the features of tuple data structure?
d. Explain the syntax of "for- loop"
e. Write a short note on dictionary data type in Python?
f. What are lambda functions in Python?
g. Explain the List Slicing and List Mutability.
h. Calculate y if x = range(10) and y = x[::3]
i. Describe Asymptotic Notation.
j. Explain memorization.

SECTION B

2. Attempt any *three* of the following: 10 x 3 = 30

a. Explain the importance of break and continue keyword with the help of python program.
b. Apply quick sort algorithm in the list [65,81,37,45,62,13,7,8,12,55]. Also write its algorithm and analyze its complexity
c. Write about Errors and Exception Handling in Python programming?
d. Create a binary search tree of the given list [12,87,23,12,25,2,13,76,54,32] and then delete 12 element from it . Show all the steps
e. Explain classes & objects in python. Also give its example.

SECTION C

3. Attempt any *one* part of the following: 10 x 1 = 10

(a) Give short note on the following?
i) Python statement
ii) Multiline statement
iii) Python Indentation
iv) Python comments
(b) Explain -filter(),map(),reduce() functions with example

4. Attempt any *one* part of the following: 10 x 1 = 10

(a) Explain binary search. Also write the python code of it.
(b) Explain the term sorting. Discuss and create a python program to implement merge sort.

5. Attempt any *one* part of the following: 10 x 1 = 10

(a) Explain the List Accessing Methods and List Comprehension.
(b) Describe about variable length arguments with suitable program.

6. Attempt any *one* part of the following: 10 x 1 = 10

(a) Explain Queue data structure with its operation
(b) Explain stack data structure with its operation

7. Attempt any *one* part of the following: 10 x 1 = 10

(a) Describe dynamic programming. Also explain Longest common subsequence problem's solution using dynamic programming
(b) Explain simple GCD problem & ways to improve it.